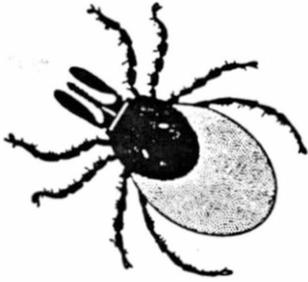


LYME DISEASE SURVEILLANCE SUMMARY



BACTERIAL ZOOSES BRANCH
DIVISION OF VECTOR-BORNE
INFECTIOUS DISEASES
CENTER FOR INFECTIOUS DISEASES
CENTERS FOR DISEASE CONTROL

VOLUME 1 - : NO. 3
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NATIONAL SECULAR TRENDS IN LYME DISEASE 1982-1989

Until recently, Lyme disease was popularly considered to be a problem of the northeastern coastal states. However, with 46 of 50 states now reporting cases and with continuing national media coverage, Lyme disease is increasingly being thought of as a nation-wide phenomenon.

Figure 1 shows the ten states reporting the most cases of Lyme disease in 1989; they accounted for 88% of the total reported Lyme disease cases in the United States. Five states (NY, CT, GA, NJ, PA) accounted for 73% of the nation's total. New York State alone reported 39% of the 1989 total from 7 counties. Figure 2 shows the frequency of reported Lyme disease cases by the Department of Health and Human Services (DHHS) regions for 1989. The Mid-Atlantic (MA) Region reported more cases than the other 8 regions combined.

Figures 3-11 show the trends for reported Lyme disease by DHHS regions for 1982-1989. The apparent decline in reported case numbers for 1986, noted in Figure 3 (Mid-Atlantic Region) and Figure 4 (Northeast Region), occurred at a time when the case definition was revised. In Figure 5 (South Atlantic Region), the marked 1989 increase in reported cases was due primarily to a 13-fold increase over 1988 reported by Georgia. In Figure 7 (Pacific Region), the small number of cases noted during 1988 resulted from no report being received from California. In Figure 9, cases reported in 1985 from West South Central Region were mainly from Texas. In Figure 10, the 1989 increase is attributed to 42 cases reported from Idaho.

We may conclude from these data that Lyme disease reporting is increasing throughout the country, but that the mid-Atlantic, northeast, upper midwest regions and California are still the major areas of disease occurrence. In some areas, such as the Rocky Mountain states where a vector has not yet been identified, the majority of cases are imported from endemic areas.

INTERNATIONAL NOTES

Australia

Recently, the Australian Department of Community Services and Health reviewed that country's experience with Lyme disease since the first possible case reported in 1982.¹ The situation is complicated by the fact that the etiologic agent has not been isolated from any source in that country.

An ixodid tick, *Ix. holocyclus*, has been proposed as a potential vector. This common bush or shrub tick inhabits the coastal plains of Queensland, New South Wales, Victoria and Tasmania where its preferred host is believed to be the bandicoot. However, a recent vector competence study suggests that *Ix. holocyclus* is not an efficient vector of North American strains of *B. burgdorferi*.²

¹Communicable Diseases Intelligence, Dr. Robert Hall, Editor. No. 90/18; 10 Sept., 1990.

²Piesman, J. and Stone, B.F. Vector Competence of the Australian Paralysis Tick, *Ixodes holocyclus*, for the Lyme Disease Spirochete, *Borrelia burgdorferi*. *Internat. J. Parasit.* (In Press).

Serologic testing of human sera for antibodies to B. burgdorferi was begun in Australia in 1987 in Queensland, followed by New South Wales and Western Australia in 1988. Of 1,247 patients tested in Queensland through June 1989, 186 (15%) were considered positive with a reciprocal IFA titer \geq 64. Three percent (28) of 926 specimens tested by both IFA and ELISA in New South Wales were identified as probable positives. Positive serologic results were obtained from 3 cases in Western Australia; one of these was acquired in Europe and details were being gathered on the remaining two. No positive serologic results have been reported from the following areas: Victoria, South Australia, Tasmania, the Northern Territory, or the Australian Capital Territory.

Canada

The Canadian Ministry of Health and Welfare recently reported that they are developing a standardized surveillance case definition for Lyme disease as well as criteria for laboratory diagnosis--both to be released this year. B. burgdorferi isolates have been obtained from both ticks and rodents in Ontario.¹

Reported Cases of Lyme Disease in Canada 1984-1989

Province	Reporting Years				Total
	1984-1987	1987	1988	1989	
Newfoundland	-	-	-	(1)*	1 (1)
New Brunswick	-	(1)	(1)	1 (2)	5 (4)
Quebec	-	-	-	1	1
Ontario	10	-	8	21	67 (28)**
Manitoba	-	-	5	12	17
Alberta	-	-	-	1	1
British Columbia	-	-	(1)	(9)	10 (10)
Prince Edward Island	-	-	-	-	0
Nova Scotia	-	-	-	-	0
Saskatchewan	-	-	-	-	0
Northwest Territories	-	-	-	-	0
Yukon	-	-	-	-	0
					102

* Number in parentheses are imported cases.

**Onset years not given for 28 imported cases.

Source: Canada Diseases Weekly Report. Vol 16-30; 28 July 1990.

ISOLATION OF BORRELIA BURGORDERI FROM HUMAN SKIN LESIONS

Although the "gold standard" for diagnosis of Lyme disease is the culture of B. burgdorferi from infected tissues or body fluids, culture is subject to numerous technical problems and is not easily performed as a routine laboratory procedure. Experience by European researchers has indicated that culture of skin biopsies can be a useful means of diagnosing Lyme disease in patients with erythema migrans. The number of patients in the United States from whom B. burgdorferi has been successfully cultured from skin or other tissues is, however, relatively small and such attempts largely have been limited to research settings. Thus, the diagnosis of Lyme disease has relied on the protean clinical manifestations, aided by serologic tests, which currently have poor accuracy. Misclassification of patients based on clinical and serologic criteria alone is thought to be commonplace.

¹Barker, I.K. et al., 1988. Ontario Disease Surveillance Report. 9:151-154.

CDC has recently initiated a special program to obtain B. burgdorferi isolates from punch biopsies and saline aspirates of erythema migrans lesions submitted by clinicians on the East Coast and in the Upper Midwest. To date, only three isolates have been made, but CDC will now attempt to expand these efforts in terms of the numbers of patients tested and the geographic regions represented. The goals include obtaining serum specimens from etiologically confirmed Lyme diseases patients for use in developing more sensitive and specific diagnostic tests and to gain a better understanding of (1) the factors that result in successful isolation of the spirochete from human skin, (2) the clinical spectrum of cutaneous lesions caused by infection with B. burgdorferi, (3) the post-treatment serologic responses in patients with definite early Lyme disease, (4) the molecular and immunologic characteristics of strains of B. burgdorferi causing illness, and (5) the geographic distribution of Lyme disease in the United States. Clinicians interested in submitting samples should contact Dr. Robert Craven or Dr. Roy Campbell for details, (303) 221-6400. There is no charge for this testing. In addition, CDC is interested in the collective experience of other scientists in the United States in culturing B. burgdorferi from skin and other tissues.

COLLECTION OF REFERENCE SERA FROM HUMAN LYME DISEASE CASES

CDC is continuing its efforts to obtain large volumes (i.e., 50-250 ml) of serum or plasma from patients with clinically well-characterized Lyme disease who have high-titer antibodies to B. burgdorferi. These immune sera are needed to standardize serologic test kits currently on the market, to evaluate new kits before they are marketed, to establish a nationwide laboratory proficiency program for serologic testing and to develop improved diagnostic test methods. Funds are available from CDC to reimburse patients, physicians, and blood banks for the donation and acquisition of these sera. Clinicians willing to acquire and submit sera should contact Dr. Robert Craven or Dr. Roy Campbell for details at (303) 221-6400.

MANDATORY REPORTING OF LYME DISEASE IN THE UNITED STATES

A recently concluded survey shows 38 states with mandatory Lyme disease reporting and 9 states where it will soon become mandatory.

States With Manadatory Lyme Disease Reporting

Arizona	Iowa	Montana	South Carolina
Arkansas	Kentucky	Nevada	South Dakota
California	Louisiana	New Jersey	Tennessee
Colorado	Maine	New Mexico	Texas
Connecticut	Maryland	New York	Utah
Delaware	Massachusetts	North Carolina	Vermont
Georgia	Minnesota	North Dakota	Virginia
Hawaii	Mississippi	Ohio	Wisconsin
Illinois	Missouri	Pennsylvania	Wyoming
Indiana		Rhode Island	

States Planning Mandatory Reporting of Lyme Disease

Alabama	Nebraska
Florida	New Hampshire
Idaho	Oklahoma
Kansas	West Virginia
Michigan	

NATIONAL LYME DISEASE VECTOR DISTRIBUTION

A critical element for a national understanding of Lyme disease is missing--a map of the distribution of proven or potential vector ticks. Clinical and laboratory diagnostic deficiencies in Lyme disease make this information important in determining foci of transmission to humans, especially in areas where Lyme disease is newly reported.

During November we will contact entomologists throughout the country by mail and enclose a data collection form for this information. Our current mailing list for entomologists working on Lyme disease is deficient and those among the readership of the Lyme Disease Surveillance Summary who have data to contribute to this national survey are requested to contact us directly if they do not receive a surveillance questionnaire by the end of November. If you have material to contribute, please call Dr. Joe Piesman or Dr. William Paul at (303) 221-6400 or write in care of the Division address:

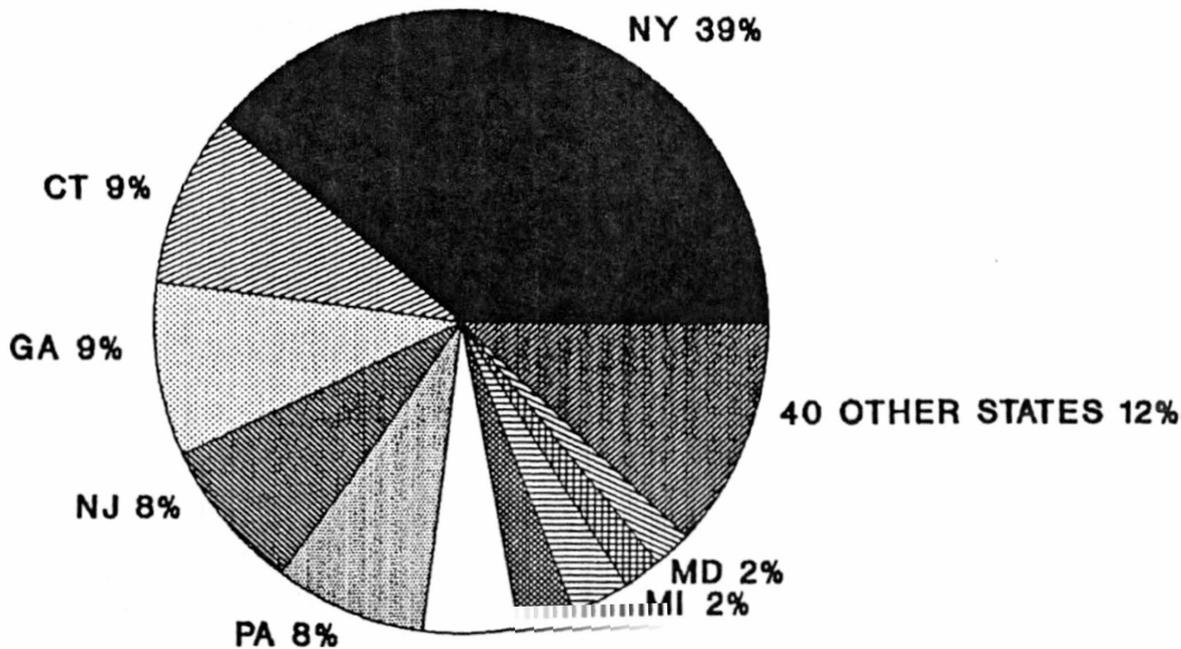
CDC/DVBID
P.O. Box 2087
Fort Collins, CO 80522

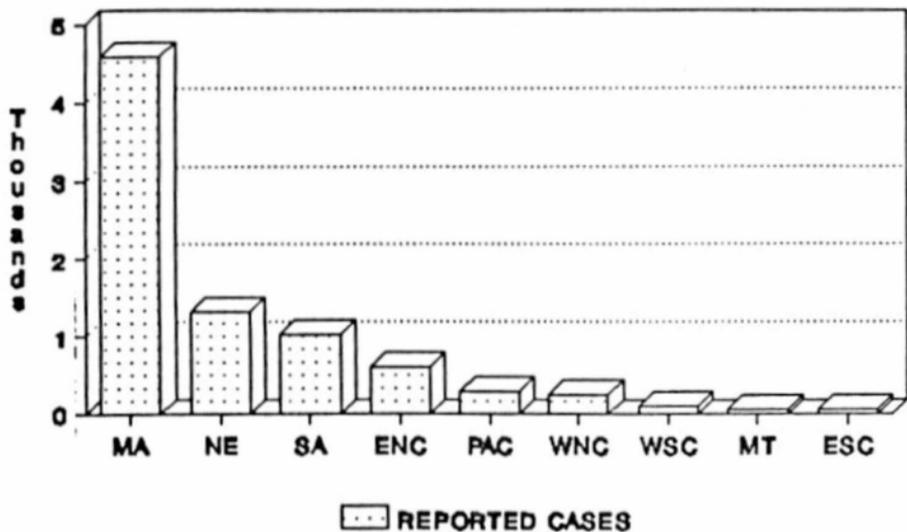
Lyme Disease Surveillance Summary (LDSS) is edited by Drs. Robert Craven and David Dennis. If you have information to contribute or wish to receive a LDSS, please contact them at:

CDC/DVBID
Lyme Disease Surveillance Summary
P.O. Box 2087
Fort Collins, CO 80522

TOP TEN STATES-LYME DISEASE 1989

TEN STATES=88% OF US TOTAL

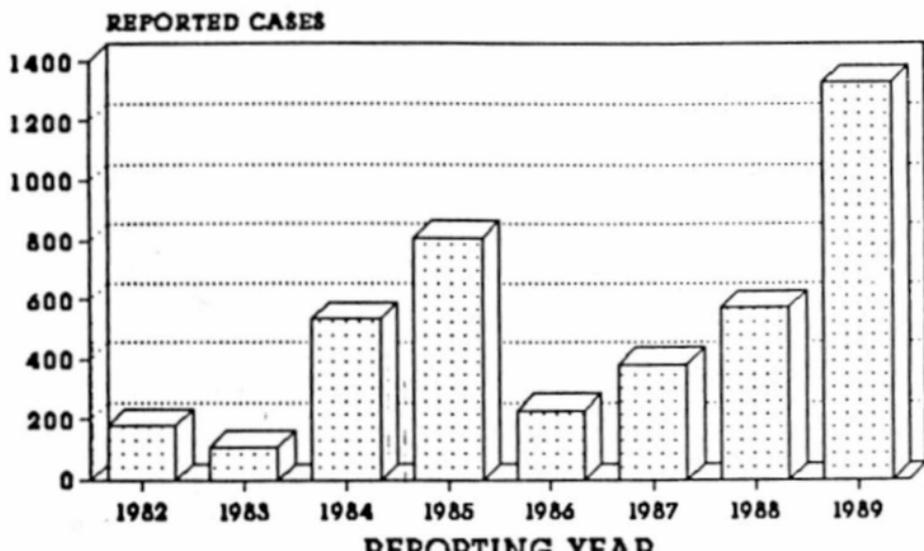


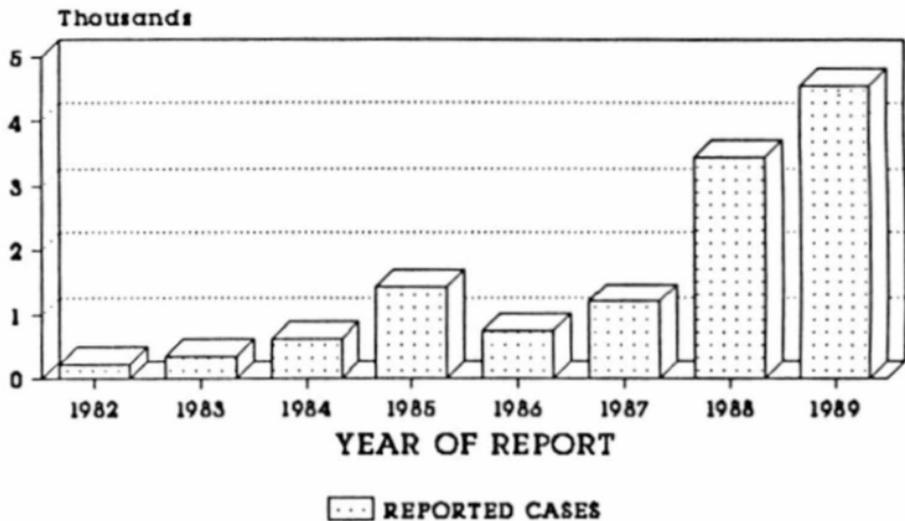


SOURCE: CENTERS FOR DISEASE CONTROL

FIGURE 4

REGIONAL LYME DISEASE 1982-1989 NORTHEAST REGION

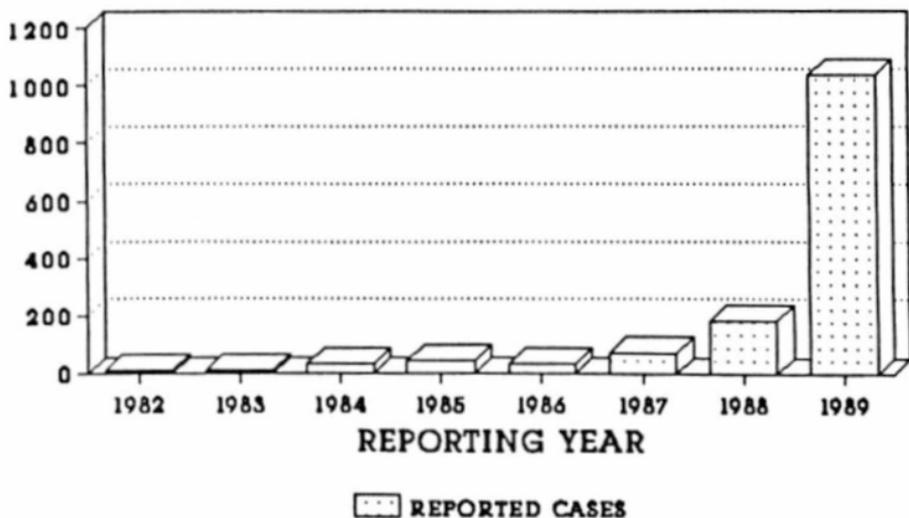


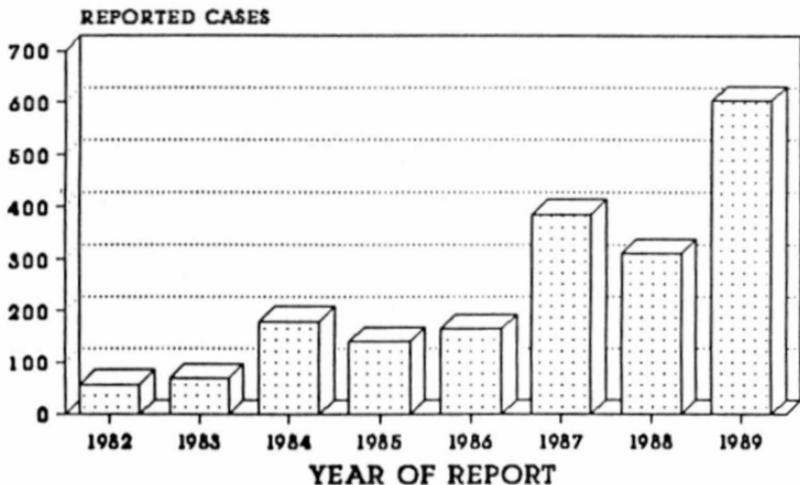


REGION-NJ,NY,PA.
SOURCE:CENTERS FOR DISEASE CONTROL

FIGURE 5

REGIONAL LYME DISEASE 1982-1989 SOUTH ATLANTIC REGION

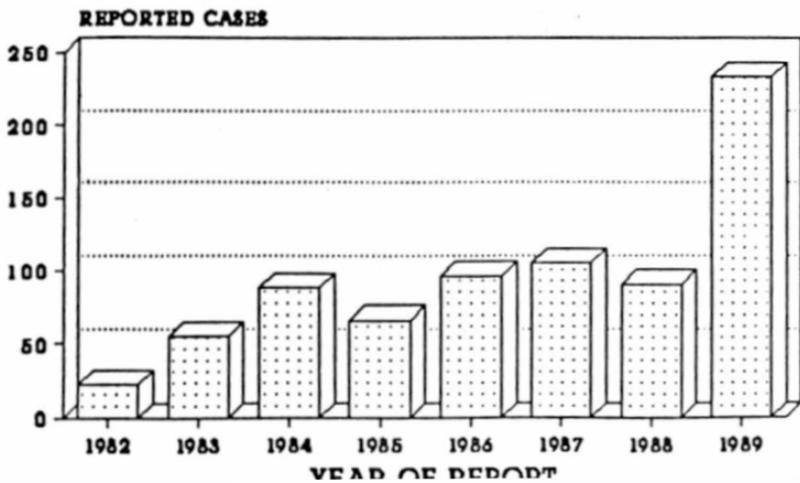


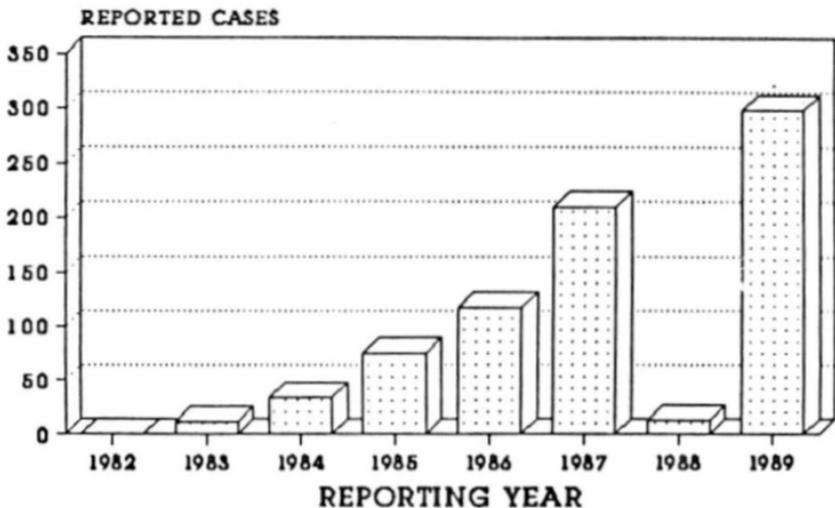


REGION-IL,IN,MI,OH,WI
SOURCE-CENTERS FOR DISEASE CONTROL

FIGURE 8

**REGIONAL LYME DISEASE 1982-1989
WEST NORTH CENTRAL**

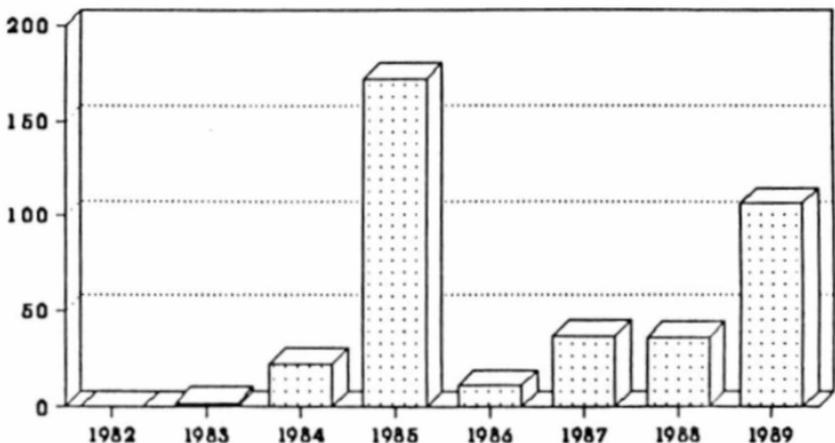




REGION = AK,CA,HI,OR,WA.
SOURCE=CENTERS FOR DISEASE CONTROL

FIGURE 9

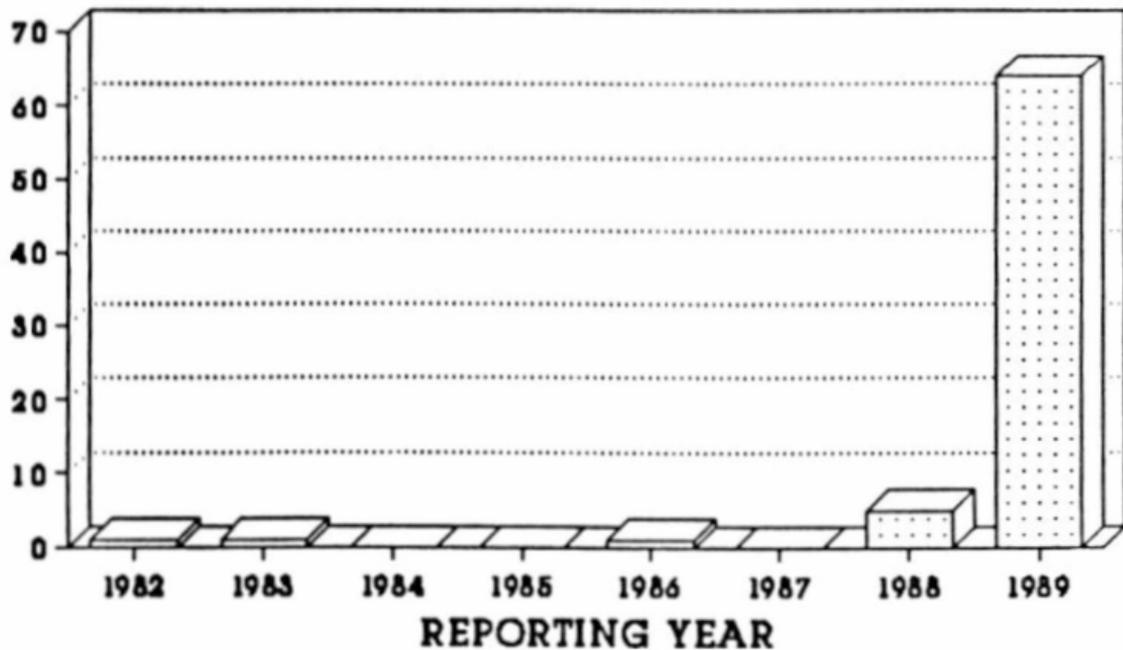
REGIONAL LYME DISEASE 1982-1989
WEST SOUTH CENTRAL REGION



REGIONAL LYME DISEASE 1982-1989

MOUNTAIN REGION

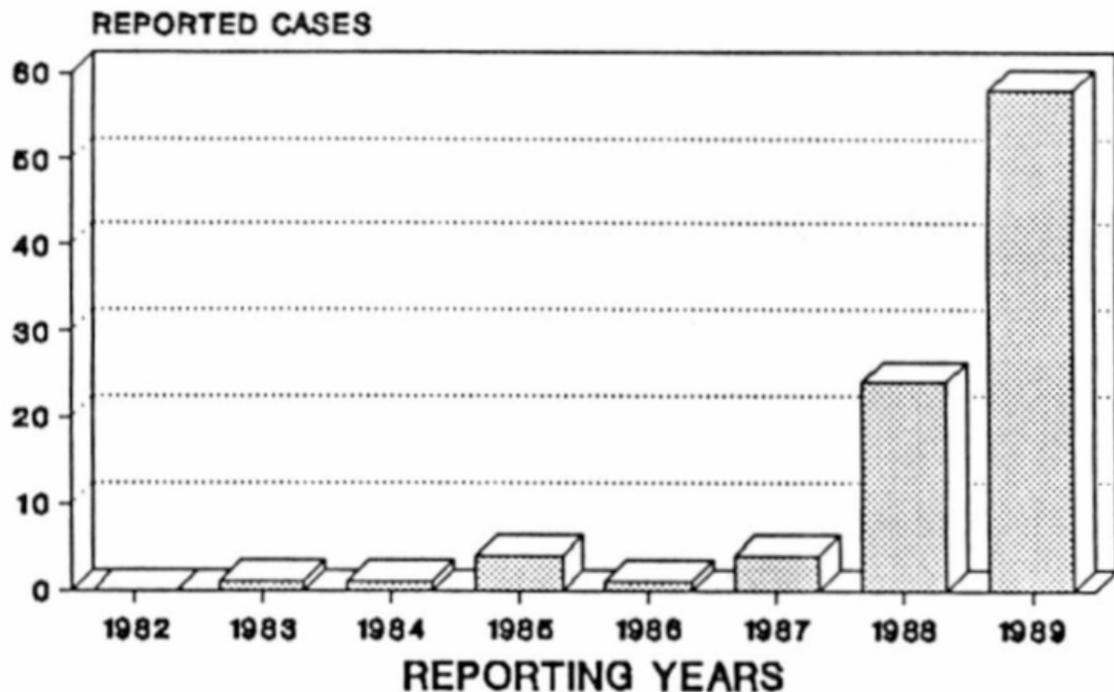
REPORTED CASES



REGION - AL.CO.ID.MT.NV.NM.UT.WY.
SOURCE:CENTERS FOR DISEASE CONTROL

REGIONAL LYME DISEASE 1982-1989

EAST SOUTH CENTRAL REGION



REGION-KY,MS,TN

SOURCE-CENTERS FOR DISEASE CONTROL